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Attorney's Docket No. 5577-175

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Dickson *et al.*

Confirmation No.: 8033

Serial No.: 09/396,873

Group Art Unit: 2134

Filed: September 15, 1999

Examiner: Christopher J. Brown

For: PROTECTING SECRET DATA ENTRY FROM INFRARED AND AUDIO
EAVESDROPPING

July 19, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION--37 C.F.R. § 1.192)**

1. Transmitted herewith, in triplicate, is the APPEAL BRIEF for the above-identified application, pursuant to the Notice of Appeal filed on May 17, 2004.
2. This application is filed on behalf of
 a small entity.
3. Pursuant to 37 C.F.R. § 1.17(c), the fee for filing the Appeal Brief is:
 small entity \$165.00
 other than small entity \$330.00

Appeal Brief fee due \$330.00

The Appeal Brief fee of \$330.00 and any additional fee or refund may be charged to IBM Deposit Account 09-0461

It is not believed that an extension of time and/or additional fee(s)-including fees for net addition of claims-are required, beyond those that may otherwise be provided for in documents accompanying this paper. In the event, however, that an extension of time is necessary to allow consideration of this paper, such an extension is hereby petitioned for under 37 C.F.R. §1.136(a). Any additional fees believed to be due in connection with this paper may be charged to Deposit Account No. 09-0461

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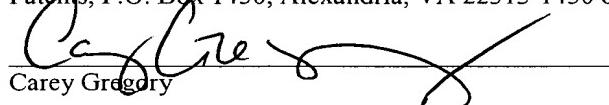
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APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §1.192

Sir:

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" mailed May 17, 2004.

Real Party In Interest

The real party in interest is assignee International Business Machines, Inc., Armonk, New York.

Related Appeals and Interferences

Appellants are aware of no appeals or interferences that would be affected by the present appeal.

Status of Claims

Claims 1-39 are pending in the application. Claims 1-37 and 39 stand rejected and Claim 38 is objected to but is indicated as containing allowable subject matter.

Appellants appeal the final rejection of Claims 1-37 and 39, which as of the filing date of this Brief remain under consideration. The attached Appendix A presents the claims at issue as finally rejected in the Final Official Action of February 17, 2004 (the Final Action) based on the rejections set forth in the Official Action mailed August 11, 2003 (the Official Action). Appellants have filed an Amendment After Final on April 27, 2004 but no indication has been provided as to whether the

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Amendment After Final has been entered. Appendix B presents the claims at issue if the Amendment After Final is entered and the pending rejections in the Final Official Action are maintained.

Status of Amendments

The attached Appendix A presents the claims as amended by the Amendment of November 10, 2003. These Amendments were entered. Appendix B presents the claims as amended by Amendment After Final on April 27, 2004. No indication has been provided as to whether the Amendment After Final has been entered.

Summary of the Invention

In today's emerging information society, more and more personal and proprietary information is stored in electronic databases. To prevent unauthorized access to these private databases, many electronic systems, computers, and networks require users to enter secret data to initialize a security relationship. While efforts have been made to utilize biological characteristics as secret data, through methods such as voice identification or retinal scanning, widespread use of these methods is years, if not decades, away. The predominant method for providing secret data remains the use of a data entry device, typically a keyboard or keypad, to enter secret data, such as a password or PIN (Personal Identification Number). Entry of the proper secret data initializes a security relationship. Specification, p. 1, lines 6-15.

A password or PIN may be stolen in several ways including detecting the keypad or keyboard using a physical sensor while the user enters his or her password or PIN or tapping into the electrical circuit or network downstream from the keypad or keyboard to capture the password or PIN after the user has entered it into the keypad or keyboard. Previous efforts have been focused on protecting PINs and passwords from this latter form of compromise; however, little work has focused on detection of secret data entry by physical sensors. Specification, p. 2, lines 26-32.

Accordingly, some embodiments of the present invention provide for protecting a data entry device from eavesdropping by masking a signature of entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature by eavesdropping. Specification, p. 5, lines 28-31. In

some embodiments, the signature may include a temperature differential in the data entry device from data entry by the user and masking the signature may include controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user. Specification, p. 5, line 32 to p. 6, line 2.

For example, controlling the external temperature of the data entry device may include maintaining the external temperature in a range surrounding a predetermined setpoint. Specification, p. 6, lines 3-5. The predetermined setpoint may be between about 35-40° C. Specification, p. 6, line 5. By controlling heating and cooling, the temperature differentials in a data entry device that a user creates by entering data into the device may be reduced such that these temperature differentials are less detectable by an infrared-imaging device. Specification, p. 6, lines 6-9.

In some embodiments of the present invention, the signature may include sound waves emitted from the data entry device and the masking may also include masking sound waves emitted from the data entry device to reduce the detectability of the sound waves. Specification, p. 6, lines 9-12. The masking of sound waves may include generating an interfering sound pattern so as to reduce the detectability of the sound waves. Specification, p. 6, lines 13-14. An interfering pattern may be generated by receiving the signature, converting the signature to an electrical signal, phase-shifting the electrical signal, converting the phase-shifted electrical signal to an audio signal, and emitting the audio signal in close proximity to the data entry device. Specification, p. 6, lines 15-18. By providing an interfering sound pattern, the sound waves created by data entry into a data entry device may be masked to reduce the detectability of the sound waves by audio eavesdropping. Specification, p. 6, lines 18-20.

Issues

1. Are Claims 1-7, 9-12, 23-28 and 30-32 properly rejected under 35 U.S.C. § 102(e) as being anticipated by United States Patent No. 5,828,034 to Chang (hereinafter "Chang")?

2. Are Claims 1, 14, 15, 19, 20, 21, 23, 33, 34 and 39 properly rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,075,606 to Lipman (hereinafter "Lipman")?

3. Are Claims 1, 14, 15, 16, 22, 23, 34, 35 and 36 properly rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,778,081 to Patrick (hereinafter "Patrick")?

4. Are Claims 1, 14, 15, 17, 23, 34, 36 and 37 properly rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 4,052,720 to McGregor (hereinafter "McGregor")?

5. Is Claim 8 properly rejected under 35 U.S.C. § 103(a) as being obvious in light of Chang?

6. Is Claim 13 properly rejected under 35 U.S.C. § 103(a) as being obvious in light of Chang in view of United States patent No. 4,727,655 to Jacobi Jr. (hereinafter "Jacobi")?

7. Is Claim 21 properly rejected under 35 U.S.C. § 103(a) as being obvious in light of Chang in view of Lipman?

Grouping of Claims

The following grouping of claims is based on the rejections in the Final Action and assumes that the Amendment After Final is not entered. These groupings correspond to the rejections that include more than one claim and, therefore, Claims 8, 13 and 21 are not in a group as these claims are each separately rejected. Thus, for appeal, the claims may be grouped together as follows:

Group I: Claims 1-7, 9-12, 23-28 and 30-32. Claims of Group I do not all stand or fall together as Appellants submit that the dependent claims are separately patentable for the reasons discussed in the Argument section below.

Group II: Claims 1, 14, 15, 19, 20, 21, 23, 33, 34 and 39. Claims of Group II do not all stand or fall together as Appellants submit that the dependent claims are separately patentable for the reasons discussed in the Argument section below.

Group III: Claims 1, 14, 15, 16, 22, 23, 34, 35 and 36. Claims of Group III do not all stand or fall together as Appellants submit that the dependent claims are separately patentable for the reasons discussed in the Argument section below.

Group IV: Claims 1, 14, 15, 17, 23, 34, 36 and 37. Claims of Group IV do not all stand or fall together as Appellants submit that the dependent claims are separately patentable for the reasons discussed in the Argument section below.

Argument

I. Introduction

Because the state of the pending claims is unknown, Appellants will first address the rejections as if the Amendment After Final is not entered and then address the rejections if the Amendment After Final is entered.

A. The Legal Standards for Anticipation

Under 35 U.S.C. § 102, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." M.P.E.P. § 2131 (quoting *Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)). "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" M.P.E.P. § 2112 (citations omitted) (emphasis added).

A finding of anticipation further requires that there must be no difference between the claimed invention and the disclosure of the cited reference as viewed by one of ordinary skill in the art. *See Scripps Clinic & Research Foundation v.*

Genentech Inc., 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991). Thus, anticipation requires that a single prior art reference disclose each and every element of the anticipated claim.

B. The Legal Standards for Obviousness

A determination under § 103 that an invention would have been obvious to someone of ordinary skill in the art is a conclusion of law based on fact. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1593, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987), *cert. denied*, 107 S.Ct. 2187. After the involved facts are determined, the decision maker must then make the legal determination of whether the claimed invention as a whole would have been obvious to a person having ordinary skill in the art at the time the invention was made. See *Panduit*, 810 F.2d at 1596. The United States Patent and Trademark Office (USPTO) has the initial burden under § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

To establish a *prima facie* case of obviousness, the prior art reference or references when combined must teach or suggest *all* the recitations of the claims, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. See M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See M.P.E.P. § 2143.01(citing *In re Mills* , 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). As emphasized by the Court of Appeals for the Federal Circuit, to support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczaik*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). In another decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

Furthermore, as stated by the Federal Circuit with regard to the selection and combination of references:

This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion....

In re Sang Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002).

The patentability of the pending claims is discussed further below.

II. The Group I Claims Are Patentable Over the Cited References

A. The Claims If the Amendment After Final Is Not Entered

1. Claims 1 and 23

The Group I Claims (Claims 1-7, 9-12, 23-28 and 30-32) stand rejected under 35 U.S.C. § 102(e) as anticipated by Chang. In particular, the Final Action incorporates the rejection in the Official Action, which cites to col. 1, lines 55-64 of Chang as disclosing the recitations of independent Claims 1 and 23. Final Action, p. 2 and Official Action, p. 2.

The cited portion of Chang describes a computer peripheral that, in combination with a heat source, keeps a user's fingers and hands warm and comfortable. Chang, col. 1, lines 53-57. The cited portion of Chang further describes warming exterior surfaces of a device or air that is circulated and flows onto the user's hands and fingers to warm them. Chang, col. 1, lines 57-64. Thus, Chang is directed to devices that warm a user's fingers or hands when using a computer peripheral.

Claim 1 of the present application recites:

1. A method for protecting data entry to a data entry device from eavesdropping comprising:
masking a signature of entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature by eavesdropping.

Corresponding recitations are found in independent Claim 23. Appellants submit that

Chang says nothing about whether the peripheral devices of Chang could mask user input or suggest that such devices would be used for such purposes. Furthermore, Appellants submit that Examiner has not established that the keyboard of Chang would inherently mask a signature of entry. For example, if the temperature of the warming air was substantially greater than that of the user and the keys of the keyboard were warmed to that temperature, then use of the keyboard by the user may be reflected in a cooling of the keys. As such, Appellants submit that the keyboard of Chang would not inherently function to mask a signature of entry.

In response to Appellants' arguments, the Final Action states that "the heated keyboard set in the range of human temperature would inherently mask a signature of entry." Final Action, p. 2. However, neither the Final Action nor the Official Action point to any portion of Chang as suggesting limiting the heating of the keyboard to "the range of human temperature" as asserted in the Final Action. In fact, in Appellants review of Chang, the only discussion of temperature is related to the temperature of electronic components and to controlling heating elements to not burn the user. *See e.g.*, Chang, col. 3, lines 42-46 and col. 2, lines 16-22.

In light of the above discussion, Appellants submit that independent Claims 1 and 23, and the remaining Group I claims, that depend from them, are neither disclosed nor suggested by Chang for at least these reasons. Appellants, therefore, request reversal of the rejection based on Chang.

2. The Dependent Claims

While each of the dependent claims is patentable as depending from a patentable base claim, Appellants submit that certain of the dependent claims are separately patentable over Chang. For example; Claim 2 recites

2. A method according to Claim 1 wherein the signature comprises a temperature differential in the data entry device from data entry by the user, and

wherein the step of masking comprises controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user.

Claim 25 recites "means for establishing the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user."

In rejecting Claims 2 and 25, the Official Action cites to col. 6, lines 6-13 of Chang. Official Action, p. 2. The cited portion of Chang states in its entirety:

Control box 76 includes a conventional manual rheostat switch 77 which a user can turn the heating elements 18, 38, 54 & 64 on or off and to set and adjust relative temperatures of the warmed input device 10, 30, 51, and/or 61. Alternatively, the control box 76 could include several manual switches 78 in addition to an on-off switch 77 for establishing temperature set points which are then read by conventional microprocessor circuitry to control the degree of warmth provided by the heating element. [See for example, Sullivan et. al at col.

Chang, col. 6, lines 6-13. Thus, the cited portion of Chang describes controlling "the degree of warmth provided by the heating element."

Appellants submit that the cited portion of Chang does not describe controlling or establishing the external temperature of the data entry device to reduce temperature differentials in the data entry device as recited in Claims 2 and 25. Chang only describes controlling the temperature of the heating element that is not in direct contact with the keys of the keyboard. *See e.g.* element 18 of Fig. 1 of Chang. Appellants submit that controlling the temperature of the heating element would not necessarily result in controlling the external temperature of the data entry device and, in particular, would not necessarily mask a signature of data entry. As such, Appellants submit that the keyboard of Chang would not inherently control or establish the external temperature of the data entry device to mask a signature of data entry as recited in Claims 2 and 25. Accordingly, Appellants submit that Claims 2 and 25 are separately patentable over Chang for at least these reasons. Appellants, therefore, request reversal of the rejection of Claims 2 and 25 based on Chang for at least these additional reasons.

Claims 12 and 28 recite that the temperature is controlled using radiation. In rejecting Claims 12 and 28, the Official Action cites to col. 3, line 31 of Chang as disclosing heating using radiation. Official Action, p. 3. However, the cited portion of Chang states that "[i]deally, the hollow volume 19 is a closed tube such that heat energy radiated by the heating element 18 is thermally isolated to a degree from keyboard signal processing circuitry elements." Chang, col. 3, lines 31-34. Appellants submit that the use of the term "radiated" in the cited portion of Chang does not disclose or suggest heating using radiation as recited in Claims 12 and 28.

Appellants submit that the heating element 18 of Fig. 1 of Chang does not heat by radiation but by conduction and/or convection and that the use of the term "radiated" was not a reference to heating via radiation. As such, Appellants submit that Claims 12 and 28 are separately patentable over Chang for at least these additional reasons. Appellants, therefore, request reversal of the rejection of Claims 12 and 28 based on Chang for at least these additional reasons.

B. The Claims If the Amendment After Final Is Entered

If the Amendment After Final is entered, Claims 1 and 25 have been cancelled, Claim 2 has been written in independent form and the recitations of Claim 25 have been incorporated into Claim 23. Accordingly, Claims 2 and 23 are patentable over Chang for the reasons discussed above with reference to Claim 1, 2, 23 and 25. Furthermore, dependent Claims 12 and 28 discussed above are also separately patentable over Chang for the reasons discussed above.

III. The Group II Claims Are Patentable Over the Cited References

A. The Claims If the Amendment After Final Is Not Entered

1. Claims 1 and 23

Claims 1, 14, 15, 19, 20, 21, 23, 33, 34 and 39 stand rejected under 35 U.S.C. § 102(b) as anticipated by Lipman. Official Action, p. 3. With regard to Claims 1 and 23, the Official Action cites to col. 2, line 24 of Lipman as disclosing the recitations of these claim. Official Action, p. 3.

Lipman is directed to a solid state DC fan motor. The cited portion of Lipman states that "[f]ans for computers and other electrical equipment are typically quite noisy due to the presence of torque/flutter, vibration, turbulence and acoustical noise." Lipman, col. 12, lines 24-26. Appellants submit that merely stating that fans of computers are noisy does not disclose or suggest the recitations of Claims 1 or 23. There is nothing in the cited portion of Lipman that says how noisy the fans are or that they are located in proximity of an input device. Furthermore, even if noisy, unless the noise is at the correct frequency, such that it would mask data entry noises, the mere presence of noise would not necessarily result in the masking recited in Claims 1 and 23. In fact, nothing in the cited portion of Lipman discloses or suggests

masking data entry as recited in Claims 1 and 23. Appellants submit that, merely because something can be noisy, does not disclose the recitations of the independent claims.

The Final Action asserts that "[i]t is obvious that the fan would be loud, for example shown on page 1 of Fan Noise Solutions." Final Action, p. 2. However, merely because some other fan described in Fan Noise Solutions would be "loud" does not disclose masking a signature of data entry as recited in Claims 1 and 23. Accordingly, Claims 1 and 23 and the claims that depend from them are neither disclosed nor suggested by the cited portions of Lipman for at least these reasons. Appellants, therefore, request reversal of the rejection based on Lipman.

2. The Dependent Claims

While each of the dependent claims rejected based on Lipman are patentable as depending from a patentable base claim, Appellants submit that certain of the dependent claims are also separately patentable over Lipman.

Initially, Appellants note that Claim 21 is mentioned as anticipated by Lipman, however, this claim is not discussed in the anticipation rejections of the Final Action or the previous Official Action. *See* Final Action, p. 2. In particular, Claim 21 recites that, in addition to generating a masking sound, "the blower blows a stream of temperature-controlled air in proximity to the data entry device controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user." Appellants submit that the recitations of Claim 21 are not disclosed or suggested by the DC fan of Lipman and, therefore, Claim 21 is separately patentable over Lipman for at least these reasons. Appellants, therefore, request reversal of the rejection of Claim 21 based on Lipman for at least these additional reasons.

Appellants also submit that Claims 15 and 34 are separately patentable over Lipman. Claim 15 recites:

15. A method according to Claim 14 wherein the step of masking sound waves comprises generating an interfering sound pattern so as to reduce the detectability of the sound waves.

Similar recitations are found in device Claim 34. In rejecting Claims 15 and 34, the Official Action merely cites to a "noisy fan" of Lipman. Official Action, p. 4. However, merely because a fan generates sound does not disclose "generating and interfering sound pattern so as to reduce the detectability of the sound waves" as recited in Claims 15 and 34. The sound generated by the fan must be an interfering sound pattern. Neither the Official Action nor the Final Action provide any support for the assertion that the sound generated by the fan of Lipman would be an interfering sound pattern that reduced the detectability of sound waves of the signature of data entry of a data entry device as recited in Claims 15 and 34. Accordingly, Appellants submit that Claims 15 and 34 are separately patentable over Lipman for at least these additional reasons. Appellants, therefore, request reversal of the rejection of Claims 15 and 34 based on Lipman for at least these additional reasons.

Claim 39 recites that "the sound generator comprises a blower which disrupts the sound waves by blowing a stream of air in proximity to the data entry device." Appellants submit that the DC fan of Lipman does not disclose or suggest a blower which disrupts sound waves as is recited in Claim 39. As such, Appellants submit that Claim 39 is separately patentable for at least these additional reasons. Appellants, therefore, request reversal of the rejection of Claim 39 based on Lipman for at least these additional reasons.

B. The Claims If the Amendment After Final Is Entered

If entered, the Amendment After Final cancels Claims 1 and 14, writes Claim 15 in independent form and amends Claim 23 to incorporate the recitations of Claim 25. Thus, Claim 23 as amended is not rejected based on Lipman. The Amendment After Final also cancels Claim 33 and writes Claim 34 in independent form. Thus, Appellants submit that Claims 15 and 34 are patentable over Lipman for the reasons discussed above with reference to Claims 1, 23, 15 and 34. Appellants submit that Claim 39 is also patentable over Lipman for the reasons discussed above.

IV. The Group III Claims Are Patentable Over the Cited References

A. The Claims If the Amendment After Final Is Not Entered

1. Claims 1 and 23

Claims 1, 14, 15, 16, 22, 23, 34, 35 and 36 stand rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 5,778,081 to Patrick (hereinafter "Patrick"). Official Action, p. 4. In particular, the Official Action cites to col. 4, lines 30-37 of Patrick as disclosing the recitations of Claims 1, 14, 15, 16, 22, 23, 35 and 36. The cited portion of Patrick describes an active noise control that cancels noise from an air conditioning duct. Patrick, col. 4, lines 28-45. Nothing in the cited portion of Patrick discloses or suggests that such an active noise control be used to mask a signature of data entry as recited in Claims 1 and 23. Certainly, the cited portion of Patrick does not disclose such a use nor does it describe a system that is configured for such a use. Accordingly, Appellants submit that the cited portion of Patrick does not disclose or suggest the recitations of Claims 1 and 23 or the Group III Claims that depend from them for at least these reasons. Appellants, therefore, request reversal of the rejection based on Patrick for at least these reasons.

2. The Dependent Claims

While each of the dependent claims rejected based on Patrick is patentable as depending from a patentable base claim, Appellants submit that certain of the dependent claims are separately patentable over Patrick. For example, Appellants also submit that Claims 15 and 34 are separately patentable over Patrick. Claim 15 recites:

15. A method according to Claim 14 wherein the step of masking sound waves comprises generating an interfering sound pattern so as to reduce the detectability of the sound waves.

Similar recitations are found in device Claim 34.

In rejecting Claims 15 and 34, the Official Action cites to the above referenced portion of Patrick. Official Action, p. 4. As discussed above, the cited portion of Patrick describes an active noise control that cancels noise from an air conditioning duct. Nothing in the cited portion of Patrick discloses or suggests that such an active noise control be used to mask data entry as recited in Claims 15 and 34. In claims 15 and 34, Appellants are not claiming merely active noise cancellation but a specific use

of sound generation to mask a signature of data entry. The cited portion of Patrick does not disclose such a use nor does it describe a system that is configured for such a use. Accordingly, Appellants submit that Patrick does not disclose or suggest the recitations of Claims 15 and 34 or the Group III Claims that depend from them for at least these additional reasons. Appellants, therefore, also request reversal of the rejection of these claims based on Patrick.

Claim 22 recites "the step of masking comprises by providing **a sound-dampening device on the data entry device.**" The cited portion of Patrick does not describe a data entry device and, therefore, does not disclose or suggest a sound-dampening device on a data entry device. Accordingly, Appellants submit that Patrick does not disclose or suggest the recitations of Claim 22 for at least these reasons. Appellants, therefore, also request reversal of the rejection of Claim 22 based on Patrick.

B. *The Claims If the Amendment After Final Is Entered*

As discussed above, if the Amendment After Final is entered, Claims 1 and 14 are cancelled, Claim 15 is written in independent form and Claim 23 is amended to incorporate the recitations of Claim 25. Claim 22 is also written in independent form. Thus, amended Claim 23 is not rejected based on Patrick. Claim 33 is cancelled and Claim 34 is written in independent form. Thus, Appellants submit that independent Claims 15, 34 and 22 are patentable over Patrick for the reasons discussed above with reference to Claims 1, 23, 15, 34 and 22. Appellants submit that the claims that depend from these claims are patentable at least as depending from a patentable base claim.

V. **The Group IV Claims Are Patentable Over the Cited References**

A. *The Claims If the Amendment After Final Is Not Entered*

1. *Claims 1 and 23*

Claims 1, 14, 15, 17, 23, 34, 36 and 37 stand rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 4,052,720 to McGregor (hereinafter "McGregor"). Official Action, p. 4. The Official Action cites to col. 3, line 61 of McGregor as disclosing the recitations of these claims. In particular, if the citation is

interpreted as referring to the paragraph beginning at line 61, the cited portion of McGregor describes noise control that combines a generated noise and music "in a manner that optimizes the psychological effect of the mixture onto a person residing in the room." McGregor, col. 4, line 61 to col. 5, line 2. Nothing in the cited portion of McGregor discloses or suggests that such generated noise and music be used to mask as signature of data entry as recited in Claims 1 and 23. Accordingly, Appellants submit that McGregor does not disclose or suggest the recitations of Claims 1 and 23 or the Group IV Claims that depend from them for at least these reasons. Appellants, therefore, request reversal of the rejection based on McGregor.

2. The Dependent Claims

While each of the dependent claims rejected based on McGregor is patentable as depending from a patentable base claim, Appellants submit that certain of the dependent claims are separately patentable over McGregor. For example, Appellants also submit that Claims 15 and 34 are separately patentable over McGregor. Claim 15 recites:

15. A method according to Claim 14 wherein the step of masking sound waves comprises generating an interfering sound pattern so as to reduce the detectability of the sound waves.

Similar recitations are found in device Claim 34.

As discussed above, the cited portion of McGregor combines a generated noise and music "in a manner that optimizes the psychological effect of the mixture onto a person residing in the room." McGregor, col. 4, line 61 to col. 5, line 2. Nothing in the cited portion of McGregor discloses or suggests that such generated noise and music be used to mask a signature of data entry as recited in Claims 15 and 34. Accordingly, Appellants submit that McGregor does not disclose or suggest the recitations of Claims 15 and 34 or the Group IV Claims that depend from them for at least these reasons and analogous reasons to those discussed above with reference to Patrick. Appellants, therefore, also request reversal of the rejection of Claims 15 and 34 and the claims that depend from them for at least these additional reasons.

B. *The Claims If the Amendment After Final Is Entered*

As discussed above, if the Amendment After Final is entered, Claims 1 and 14 are cancelled, Claim 15 is written in independent form and Claim 23 is amended to incorporate the recitations of Claim 25. Thus, amended Claim 23 is not rejected based on McGregor. Claim 33 is cancelled and Claim 34 is written in independent form. Thus, Appellants submit that independent Claims 15 and 34 are patentable over McGregor for the reasons discussed above with reference to Claims 1, 23, 15 and 34. Appellants submit that the claims that depend from these claims are patentable at least as depending from a patentable base claim. Appellants, therefore, request reversal of the rejection based on McGregor.

VI. **Claims 8, 13 and 21 Are Patentable Over the Cited References**

A. *The Claims If the Amendment After Final Is Not Entered*

1. *Claim 8*

Claim 8 stands rejected under 35 U.S.C. § 103 as obvious in light of Chang. Applicants submit that Claim 8 is patentable at least per its base claim. Furthermore, as Chang does not relate to masking data entry, Applicants submit that there would be no reason to modify Chang to perform such a function.

Claim 8 recites that the predetermined set point at which the external temperature of the data entry device is maintained is between 35-40 °C. The Official Action asserts that Chang discloses "a range of temperatures from room temperature 21C (70F) to 49C (120F)" and cites to col. 3, line 46 of Chang. Official Action, p. 5. However, this portion of Chang states:

The skilled circuit designer should also select required keyboard signal processing circuitry components that operate efficiently and are not sensitive to expected variations in temperature ranging up to 120° F.

Chang, col. 3, lines 42-46. Thus, Chang does not provide a range of operation temperatures of external surfaces of the keyboard as recited in Claim 8, but describes 120 °F as a maximum temperature for the keyboard signal processing circuitry.

Furthermore, there is no indication in Chang that the recited range of Claim 8 should be used or that Chang controls the temperature of external surfaces to be within the range recited in Claim 8. The only assertion as to the motivation to modify

Chang to result in the recitations of Claim 8 is that "[i]t would have been obvious to pick a temperature in the middle of this range for user comfort." Official Action, p. 5. In addition to being the type of hindsight, conclusory assertion that cannot properly provide a motivation for modification of a reference, this assertion appears to be factually inaccurate. In particular, the cited portion of Chang relates to the operation and efficiency of the circuitry, not the temperature selected by a user.

In light of the above discussion, Appellants submit that the Official Action has failed to establish a *prima facie* case of obviousness for at least these reasons. Accordingly, Appellants request that the rejection of Claim 8 based on Chang be reversed.

2. Claim 13

Claim 13 stands rejected under 35 U.S.C. § 103 as obvious in light of Chang and United States Patent No. 4,727,655 to Jacobi Jr. (hereinafter "Jacobi"). Claim 13 recites, in part, that the radiation comprises "emitting heat from an infrared-emitting lamp."

Appellants submit that Claim 13 is patentable at least as depending from a patentable base claim. Appellants further submit that, as Chang does not relate to masking data entry, there would be no reason to modify Chang to perform such a function. Additionally, Jacobi describes a dryer for printed materials. *See* Jacobi, col. 2, lines 30-32. Appellants submit that one of skill in the art would not look to the heat lamp assembly of Jacobi that is used for drying coated printed materials to combine with the keyboard of Chang to result in the recitations of Claim 13. The Official Action's stated motivation for combining Jacobi and Chang to result in the recitations of Claim 13 is "because the lamp is economical and efficient." Official Action, p. 5. However, such a motivation is a conclusory assertion that may not provide a proper motivation to combine. Furthermore, there is no indication of how the heat lamp assembly of Jacobi could even be used with the keyboard of Chang. Accordingly, Appellants submit that Claim 13 is separately patentable over the cited references for at least these additional reasons. Accordingly, Appellants request reversal of the rejection of Claim 13.

3. Claim 21

Claim 21 stands rejected under 35 U.S.C. § 103 as obvious in light of Chang and Lipman. Appellant submits that Claim 21 is patentable at least per the patentability of its base claim. Appellants further submit that the combination of Chang and Lipman does not result in the recitations of Claim 21 and can only be arrived at through the impermissible use of hindsight. In particular, Appellants submit that the combination of Chang and Lipman would provide a computer with a heated keyboard and a noisy fan. That is not what is claimed in Claim 21. Furthermore, as discussed above, neither Chang nor Lipman relate to masking of data entry. Thus, neither Lipman nor Chang are directed to solving the problem solved by the present invention. Therefore, one of skill in the art would not be motivated to combine the unrelated teachings of Lipman with those of Chang to result in the recitations of Claim 21. Accordingly, Appellants submit that Claim 21 is separately patentable for at least these additional reasons and request reversal of the rejection of Claim 21.

B. The Claims If the Amendment After Final Is Entered

Claims 8, 13 and 21 are not amended in the Amendment After Final. Accordingly, if the Amendment After Final is entered, these claims are patentable over the cited references for the same reasons discussed above.

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VII. Conclusion

In light of the above discussion, Appellant submits that each of the pending claims are patentable over the cited references and, therefore, requests reversal of the rejections of Claims 1-37 and 39.

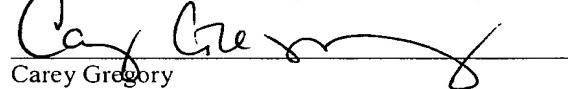
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Carey Gregory

Appendix A
Pending Claims if Amendment After Final is Not Entered

1. (Previously Presented) A method for protecting data entry to a data entry device from eavesdropping comprising:

masking a signature of entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature by eavesdropping.

2. (Original) A method according to Claim 1 wherein the signature comprises a temperature differential in the data entry device from data entry by the user, and

wherein the step of masking comprises controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user.

3. (Original) A method according to Claim 1 wherein the data entry device is a keyboard.

4. (Original) A method according to Claim 1 wherein the data entry device has external surfaces that are thermally conductive.

5. (Original) A method according to Claim 1 wherein the data entry device has external surfaces that are thermally resistive.

6. (Original) A method according to Claim 2 wherein the step of controlling comprises the step of maintaining the external temperature in a range surrounding a predetermined setpoint.

7. (Original) A method according to Claim 6 wherein the step of maintaining the external temperature comprises the steps of:

monitoring the external temperature of the data entry device to provide a device temperature, and

adjusting the output of a temperature control mechanism responsive to the device temperature so as to maintain the device temperature at approximately the setpoint.

8. (Original) A method according to Claim 6 wherein the predetermined setpoint is between 35-40 °C.

9. (Original) A method according to Claim 2 wherein the controlling step comprises the step of controlling the external temperature utilizing conduction.

10. (Original) A method according to Claim 2 wherein the controlling step comprises the step of controlling the external temperature utilizing convection.

11. (Original) A method according to Claim 10 wherein the step of controlling the external temperature utilizing convection comprises blowing a stream of temperature-controlled air in proximity to the data entry device.

12. (Original) A method according to Claim 2 wherein the controlling step comprises the step of controlling the external temperature utilizing radiation.

13. (Original) A method according to Claim 12 wherein the step of controlling the external temperature utilizing radiation comprises emitting heat from an infrared-emitting lamp in proximity to the data entry device.

14. (Original) A method according to Claim 1
wherein the signature comprises sound waves emitted from the data entry device, and
wherein the step of masking comprises masking sound waves emitted from the data entry device to reduce the detectability of the sound waves.

15. (Original) A method according to Claim 14 wherein the step of masking sound waves comprises generating an interfering sound pattern so as to reduce the detectability of the sound waves.

16. (Original) A method according to Claim 15 wherein the step of generating comprises the steps of:

receiving the signature,
converting the signature to an electrical signal,
phase-shifting the electrical signal,
converting the phase-shifted electrical signal to an audio signal, and
emitting the audio signal in close proximity to the data entry device.

17. (Original) A method according to Claim 15 wherein the step of generating comprises emitting pre-recorded sounds.

18. (Original) A method according to Claim 17 wherein the pre-recorded sounds are recorded sounds of random input to the data entry device.

19. (Original) A method according to Claim 15 wherein the step of generating comprises providing background noise to mask the sound waves emitted from the data entry device.

20. (Original) A method according to Claim 19 wherein the background noise is provided by a blower.

21. (Original) A method according to Claim 20 wherein the blower blows a stream of temperature-controlled air in proximity to the data entry device controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user.

22. (Original) A method according to Claim 14 wherein the step of masking comprises providing a sound-dampening device on the data entry device.

23. (Original) A system for protecting data entry to a data entry device from eavesdropping comprising:

a data entry device, and

means for masking a signature of entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature by eavesdropping.

24. (Original) A system according to Claim 23 wherein the data entry device is a keyboard.

25. (Original) A system according to Claim 23 wherein the means for masking comprises means for establishing the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user.

26. (Original) A system according to Claim 25 wherein the means for establishing comprises a resistive heating source operably associated with the data entry device so as to maintain the external temperature in a range surrounding a predetermined setpoint.

27. (Original) A system according to Claim 26 wherein the resistive heat source comprises a heating element formed as part of the data entry device.

28. (Original) A system according to Claim 25 wherein the means for establishing comprises a radiant heat source operably associated with the data entry device so as to maintain the external temperature in a range surrounding a predetermined setpoint.

29. (Original) A system according to Claim 28 wherein the radiant heat source comprises an infrared emitting lamp which radiates heat in proximity to the data entry device.

30. (Original) A system according to Claim 25 wherein the means for establishing comprises a convection heat source operably associated with the data entry device so as to maintain the external temperature in a range surrounding a predetermined setpoint.

31. (Original) A system according to Claim 30 wherein the convection heat source comprises a blower which provides a stream of air in proximity to the data entry device.

32. (Original) A system according to Claim 23 wherein the means for masking comprises a feedback control circuit which provides a closed loop feedback control of the temperature wherein the feedback control circuit comprises:

a temperature sensor operably associated with the data entry device so as to measure the external temperature of the data entry device, and

a control circuit operably associated with the temperature sensor and with means for controlling temperature so as to control the means for establishing the external temperature of the data entry device based on the sensed temperature.

33. (Original) A system according to Claim 23 wherein the means for masking comprises means for masking sound waves emitted from the data entry device to reduce the detectability of the sound waves.

34. (Original) A system according to Claim 33 wherein the means for masking sound waves comprises means for generating an interfering sound pattern so as to reduce the detectability of the sound waves.

35. (Original) A system according to Claim 34 wherein the means for generating comprises a noise cancellation circuit which cancels the sound waves emitted by the data entry device wherein the noise cancellation circuit comprises:

a microphone operably associated with the data entry device so as to receive sound waves from the entry of data by a user into the data entry device,

a first converting means operably associated with the microphone so as to convert the sound waves into an electrical signal,
a phase-shifting means operably associated with the first converting means so as to shift the phase of the electrical signal to produce a phase-shifted electrical signal,
a second converting means operably associated with the phase-shifting means so as to convert the phase-shifted electrical signal to an audio signal, and
an emitting means operably associated with the second converting means so as to emit the audio signal in close proximity to the data entry device.

36. (Original) A system according to Claim 34 wherein the means for generating comprises a sound generator operably associated with the data entry device so as to generate an interfering sound pattern so as to reduce the detectability of the sound waves.

37. (Original) A system according to Claim 36 wherein the sound generator comprises a speaker which emits pre-recorded sounds.

38. (Original) A system according to Claim 37 wherein the pre-recorded sounds are recorded sounds of random input into the data entry device.

39. (Original) A system according to Claim 36 wherein the sound generator comprises a blower which disrupts the sound waves by blowing a stream of air in proximity to the data entry device.

Appendix B
Pending Claims if Amendment After Final is Entered

1. Cancelled.

2. (Previously Presented) A method for protecting data entry to a data entry device from eavesdropping, wherein a signature of data entry comprises a temperature differential in the data entry device from data entry by the user, comprising:

masking the signature of data entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature through eavesdropping by controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user.

3. (Previously Presented) A method according to Claim 2 wherein the data entry device is a keyboard.

4. (Previously Presented) A method according to Claim 2 wherein the data entry device has external surfaces that are thermally conductive.

5. (Previously Presented) A method according to Claim 2 wherein the data entry device has external surfaces that are thermally resistive.

6. (Original) A method according to Claim 2 wherein the step of controlling comprises the step of maintaining the external temperature in a range surrounding a predetermined setpoint.

7. (Original) A method according to Claim 6 wherein the step of maintaining the external temperature comprises the steps of:

monitoring the external temperature of the data entry device to provide a device temperature, and

adjusting the output of a temperature control mechanism responsive to the device temperature so as to maintain the device temperature at approximately the setpoint.

8. (Original) A method according to Claim 6 wherein the predetermined setpoint is between 35-40 °C.

9. (Original) A method according to Claim 2 wherein the controlling step comprises the step of controlling the external temperature utilizing conduction.

10. (Original) A method according to Claim 2 wherein the controlling step comprises the step of controlling the external temperature utilizing convection.

11. (Original) A method according to Claim 10 wherein the step of controlling the external temperature utilizing convection comprises blowing a stream of temperature-controlled air in proximity to the data entry device.

12. (Original) A method according to Claim 2 wherein the controlling step comprises the step of controlling the external temperature utilizing radiation.

13. (Original) A method according to Claim 12 wherein the step of controlling the external temperature utilizing radiation comprises emitting heat from an infrared-emitting lamp in proximity to the data entry device.

14. Cancelled.

15. (Previously Presented) A method for protecting data entry to a data entry device from eavesdropping, wherein a signature of data entry comprises sound waves emitted from the data entry device, comprising:

masking the signature of data entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature through eavesdropping by generating an interfering sound pattern so as to reduce the detectability of the sound waves.

16. (Original) A method according to Claim 15 wherein the step of generating comprises the steps of:

receiving the signature,
converting the signature to an electrical signal,
phase-shifting the electrical signal,
converting the phase-shifted electrical signal to an audio signal, and
emitting the audio signal in close proximity to the data entry device.

17. (Original) A method according to Claim 15 wherein the step of generating comprises emitting pre-recorded sounds.

18. (Original) A method according to Claim 17 wherein the pre-recorded sounds are recorded sounds of random input to the data entry device.

19. (Original) A method according to Claim 15 wherein the step of generating comprises providing background noise to mask the sound waves emitted from the data entry device.

20. (Original) A method according to Claim 19 wherein the background noise is provided by a blower.

21. (Original) A method according to Claim 20 wherein the blower blows a stream of temperature-controlled air in proximity to the data entry device controlling the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user.

22. (Previously Presented) A method for protecting data entry to a data entry device from eavesdropping, wherein a signature of data entry comprises sound waves emitted from the data entry device, comprising:

masking the signature of data entry resulting from entry of data by a user of the data entry device so as to reduce the detectability of the signature through eavesdropping by providing a sound-dampening device on the data entry device.

23. (Previously Presented) A system for protecting data entry to a data entry device from eavesdropping comprising:

a data entry device, and

means for establishing the external temperature of the data entry device to reduce temperature differentials left in the data entry device by the user so as to mask a signature of entry resulting from entry of data by a user of the data entry device to reduce the detectability of a thermal signature by eavesdropping.

24. (Original) A system according to Claim 23 wherein the data entry device is a keyboard.

25. Cancelled.

26. (Previously Presented) A system according to Claim 23 wherein the means for establishing comprises a resistive heating source operably associated with the data entry device so as to maintain the external temperature in a range surrounding a predetermined setpoint.

27. (Original) A system according to Claim 26 wherein the resistive heat source comprises a heating element formed as part of the data entry device.

28. (Previously Presented) A system according to Claim 23 wherein the means for establishing comprises a radiant heat source operably associated with the data entry device so as to maintain the external temperature in a range surrounding a predetermined setpoint.

29. (Original) A system according to Claim 28 wherein the radiant heat source comprises an infrared emitting lamp which radiates heat in proximity to the data entry device.

30. (Previously Presented) A system according to Claim 23 wherein the means for establishing comprises a convection heat source operably associated with the data entry device so as to maintain the external temperature in a range surrounding a predetermined setpoint.

31. (Original) A system according to Claim 30 wherein the convection heat source comprises a blower which provides a stream of air in proximity to the data entry device.

32. (Previously Presented) A system according to Claim 23 wherein the means for establishing comprises a feedback control circuit which provides a closed loop feedback control of the temperature wherein the feedback control circuit comprises:

a temperature sensor operably associated with the data entry device so as to measure the external temperature of the data entry device, and

a control circuit operably associated with the temperature sensor and with means for controlling temperature so as to control the means for establishing the external temperature of the data entry device based on the sensed temperature.

33. Cancelled.

34. (Previously Presented) A system for protecting data entry to a data entry device from eavesdropping comprising:

a data entry device, and

means for generating an interfering sound pattern so as to reduce the detectability of the sound waves emitted from the data entry device so as to mask a signature of data entry resulting from entry of data by a user of the data entry device to reduce the detectability of an audio signature by eavesdropping.

35. (Original) A system according to Claim 34 wherein the means for generating comprises a noise cancellation circuit which cancels the sound waves emitted by the data entry device wherein the noise cancellation circuit comprises:

a microphone operably associated with the data entry device so as to receive sound waves from the entry of data by a user into the data entry device,

a first converting means operably associated with the microphone so as to convert the sound waves into an electrical signal,

a phase-shifting means operably associated with the first converting means so as to shift the phase of the electrical signal to produce a phase-shifted electrical signal,

a second converting means operably associated with the phase-shifting means so as to convert the phase-shifted electrical signal to an audio signal, and

an emitting means operably associated with the second converting means so as to emit the audio signal in close proximity to the data entry device.

36. (Original) A system according to Claim 34 wherein the means for generating comprises a sound generator operably associated with the data entry device so as to generate an interfering sound pattern so as to reduce the detectability of the sound waves.

37. (Original) A system according to Claim 36 wherein the sound generator comprises a speaker which emits pre-recorded sounds.

38. (Original) A system according to Claim 37 wherein the pre-recorded sounds are recorded sounds of random input into the data entry device.

39. (Original) A system according to Claim 36 wherein the sound generator comprises a blower which disrupts the sound waves by blowing a stream of air in proximity to the data entry device.